

POS.2

FINES IMPACT MILL TYPE 315 UPZ

REF. : X-2551

A	PROCEED
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NAME:	
13 SEP. 1993	
FLUOR DANIEL B.V.	

EXPANSION HSC PLANT - PROJECT NO. 5000 - HSC V.O.F.			
EQUIP./ITEM No.:		BLDG. REG. No.:	
X-2551			
HSC DWG. No.	1100022	size	rev.
		A4	A
FDBV No. 5531.05 -	101-312	REV. 01	DOC. No.: 5188
Vendor to indicate this identification and to increase rev. number with resubmittal			

Fine Impact Mill

315 UPZ

Tangential design
pressure resistant to 10 bar overpressure

X - 2551

Manufacturer's Address:

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Machine Number:

76411-2

Year of construction:

1992

Reprint with our explicit approval only!

10.90

Please observe this instruction manual. It will help you to avoid accidents and damages. It is important that you make these instructions and directions available to all personnel concerned with the installation and operation of the mentioned machine. Our liability does not apply to operating or maintenance mistakes or arbitrary modifications of the machine or components thereof or to the incorporation of spare parts of foreign make.

MADE IN GERMANY

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To this operation manual belong:

Narrow-gauge V-belts - Technical Instructions	TA 001/1
Magnetic locking device	BV 1694/2
Spare parts drawing	EZ 1122-04
Spare parts list	EL 1122-04 ...to order
Wiring diagram	to order

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1.0 Equipment of the machine

The Multiplex fine impact mill type 315 UPZ for pressure resistant operation up to max. 10 bar (overpressure) with tangential feeding and discharge.

The mill can be equipped with

- Stud discs (E)
- - Plate beater unit (C)
- Swing beater unit (D)
- Beater disk (F)
- **INSTALLED** - Baffle-ribbed grinding track) (G/H/J)
- Triangular-shaped grinding track)
- Sieve grate with screens (K/L/M/N)

The mill can be equipped with a drive between 7.5 and 22 kW.

The required equipment, speed and thus the power of the drive is preset by the respective application and the product.

2.0 Prevention of accidents

For the design and equipment of the machine, the respective regulations from registers "A" and "B" of the general administration directions concerning the "Law on the safety of machinery GSG" have been adhered to.

Accessories

such as product feed and discharge devices, protective equipment for the drive, electrical equipment, etc. which do not belong to our scope of delivery, also have to conform to the respective directions for accident prevention - guideline no. 1 (plastics processing) of the Chemical Industry, VBG 4, 5, VDE 0113, etc. if they are provided by the operator.

Safety equipment

- The electromechanical door locking device MVS permits an opening of the mill only after the complete standstill of the grinding system. A switching-on of the opened mill is not possible.
An operation manual of the magnetic locking device of the door hinge which is controlled by a standstill supervising system is annexed.
- Belt guard for mill drive

W A R N I N G

Do not remove belt guard during operation!
Do not switch on machine with removed belt guard!

To install the machine and its accessories, the operator has to pay attention to:

The recommendations of this instruction manual.
The general, respective directions for accident prevention.
The local, respective directions.
The particular guidelines of the competent trade association.

When processing inflammable or explodable products, the respective safety guidelines are to be observed.

Noise

As size reduction machine according to the "Directions for Accident Prevention - Noise - VBG 121; Annex 2", the Alpine mill belongs to the machines which may generally cause a noise emission of 90 dB(A) or more.

The machine has been manufactured according to the progressive rules of noise reduction technology, approved in practical operation. Further noise reduction at the acoustic source is not possible by constructional measures.

According to § 3, the operator has to take measures for noise reduction (see corresponding instructions).

If, according to § 4, a noise level of 85 dB(A) or 90 dB(A) is exceeded, "personal noise protecting means" are to be made available and their use is to be ordered.

Electrical equipment

Electrical equipment of the Alpine machine conforms to the VDE directions for processing machines with a nominal voltage up to 1000 volt; VDE standard 0113, when the machine was supplied with complete electrical equipment by Alpine.

The operator is responsible for ensuring that:

the specified accident prevention measures are taken, the directions for accident prevention are observed, and that the safety devices are available and in good working order at all times.

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3.0 Technical Data

3.1 Connections and Dimensions

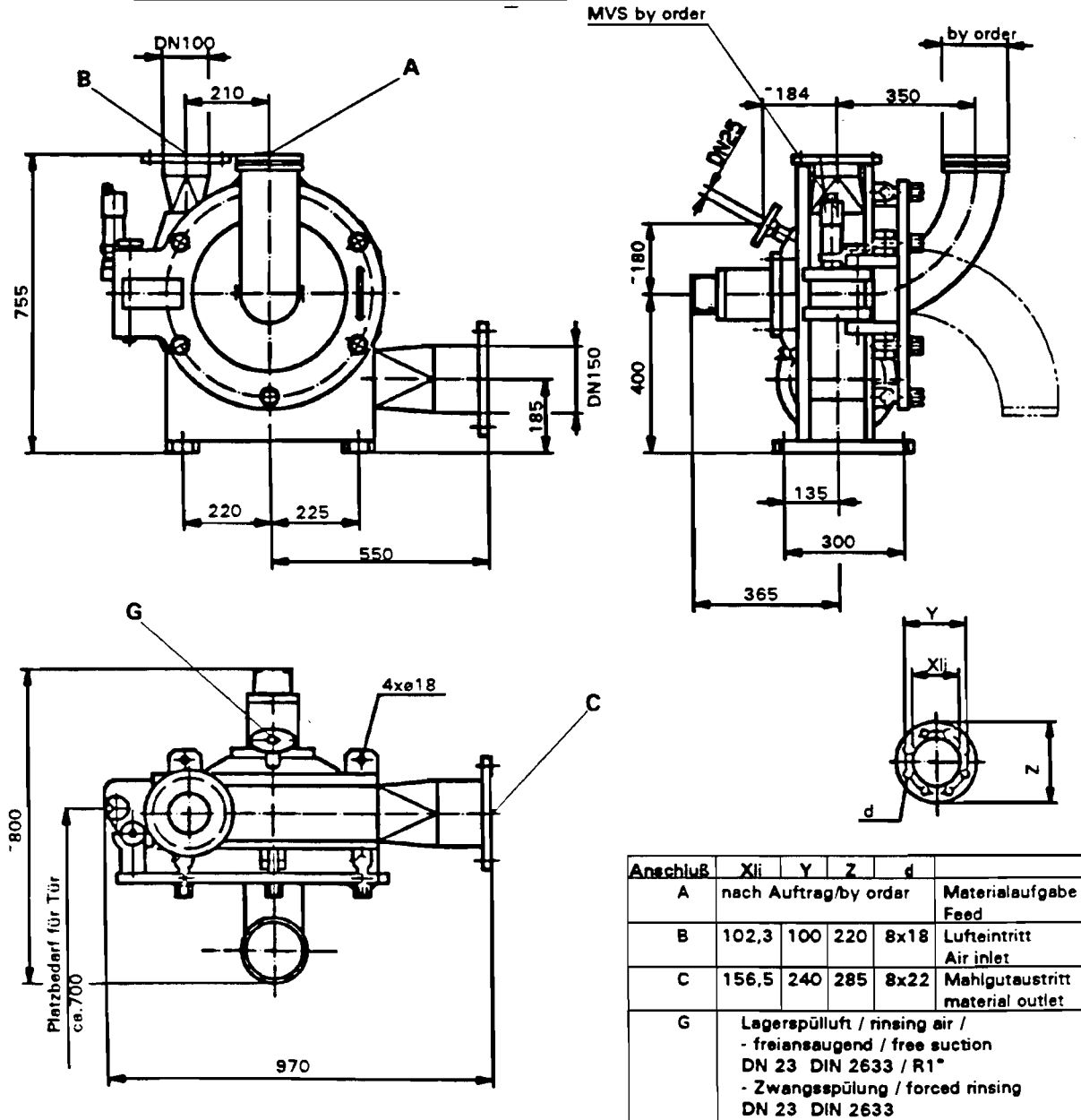


Fig. 1: General view

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Stud disc	(E)	nominal ϕ = 315 mm
Plate beater system	(C)	da = 298 mm
Swing beater system	(D)	da = 298 mm
Beater disc	(F)	da = 298 mm

3.2 Drive

<u>Maximum mill speed</u>		
Stud disc	(E)	$n_{\max} = 9000$ r.p.m.
Plate beater system	(C)	$n_{\max} = 7100$ r.p.m.
Swing beater system	(D)	$n_{\max} = 5000$ r.p.m.
Beater disc	(F)	

Drive power

Depending upon the order and equipment of the mill:

7.5 - 22 kW

Motor speed:

(1500) 3000 r.p.m.

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Speeds and diameters of the narrow-gauge V-belt pulleys, with different motors and grinding systems:

Drehzahl 1/min		SKR-Scheibe mm		Mahlwerk max. Drehzahl 1/min
Motor	Mühle	Mühle	Motor	
3000	9000	90	280	↑ 9000 Stiffscheibe ↑ 7100 Plattenschläger ↑ 5000 Pendelschläger Schlagscheibe
	8000		250	
	7100		224	
	6300		200	
	5600		180	
	5000		160	
1500	5000	90	315	
	4500		280	
	3550		224	
	3150		200	
	2800		180	
	2500		160	
	2240		140	

Narrow-gauge V-belts
Number x profile x length

6 x SPZ x 1800
acc. to DIN 7753

Weight of the machine:

- see name-plate -

3.3 Tools

All assembly and maintenance work can be carried out with normal trade tools.

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4.0 Installation

If a lifting harness is used to transport the machine, the lifting lugs at the machine housing are to be used. To choose lifting equipment, carrying means etc., the indicated weight is to be observed.

Also refer to the "directions for accident prevention - load lifting units, used as lifting means" (VBG 9a)!

4.1 Mill

Installation according to the available planning or offer drawing presented by Alpine. Special attention has to be paid to sufficient stability of the machine foundation and base!

Align the machine with a spirit level and fix it with bolts M16.

Install the accessories - such as feeding device, product bin, filter etc. - according to the drawing.

4.2 Drive

Put the motor onto the slide rails and adjust the tension of the V-belts.

Pay attention to proper alignment of the pulleys and correct belt tension.

In this respect, please refer to the Technical Instructions "Narrow-gauge V-belts " enclosed to this instruction manual.

If the machine is supplied without Alpine installation table:

After alignment, pin and bolt the slide rails to the foundation.

If no belt guard is included in Alpine`s delivery scope, the drive has to be equipped with a protection corresponding to the directions for accident prevention.

4.3 Speeds

W A R N I N G

Pay attention to the data given in para. 3.2 and on the machine.

The maximum speeds should not be exceeded!

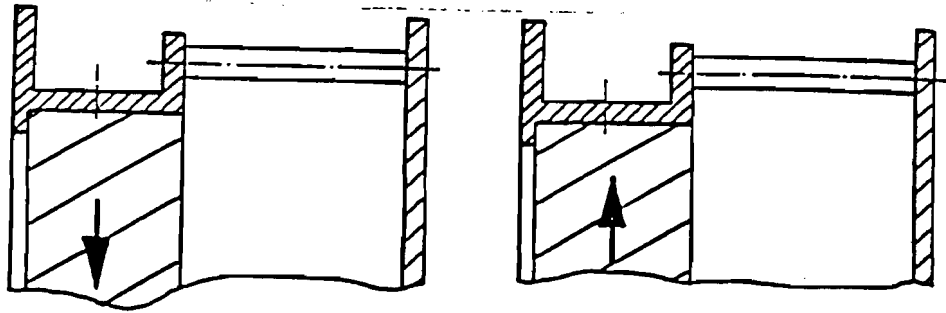
4.4 Direction of rotation

- Sieve grates:

If the machine is equipped with sieve grates, the direction of rotation of the beater system employed is optional.

Exception:

If the sieve insert of the sieve is a rasp-like sieve, the direction of rotation of the beater system should be selected so that the beaters move towards the sieve apertures and the ground material can pass through the sieve without deflection.



“gegen Förderrichtung”

“mit Förderrichtung”

Fig. 3: Baffle-ribbed grinding track: direction of rotation in and contrary to the conveying direction

- Triangular-shaped grinding track:

The direction of rotation against the short edge is used when processing hard, brittle materials. Generally speaking, this results in a finer product than selecting the direction of rotation against the long edge.

The direction of rotation against the long edge is preferred for softer, compressible materials which tend to form deposits. The beater system can either be directly reversed in the direction of rotation or, if this is not possible (plate beater system), can be turned by 180°.

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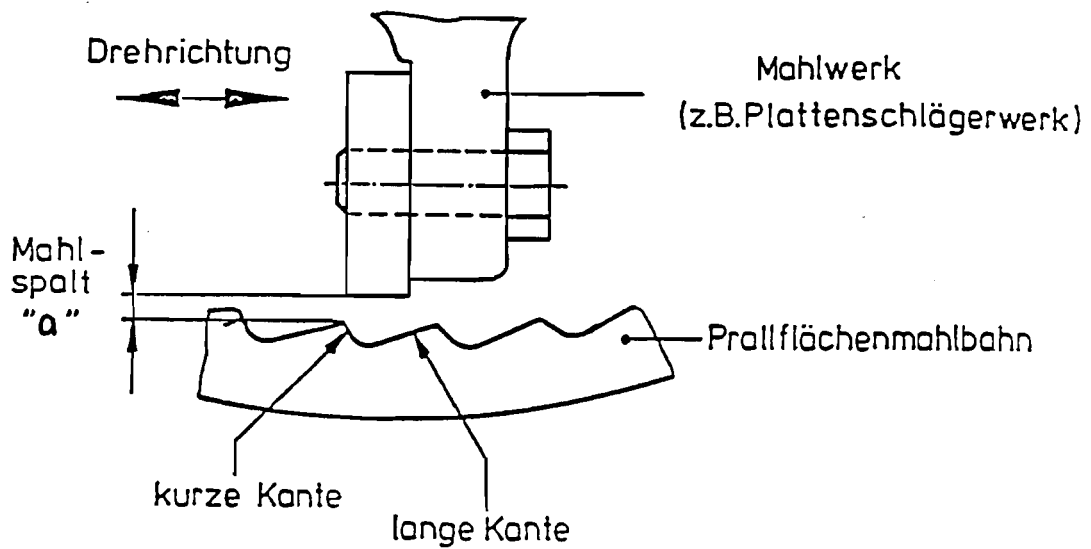


Fig. 4: Triangular-shaped grinding track and direction of rotation

4.5 Rinsing air

Normally, the rinsing air intake is automatic.

W A R N I N G

The rinsing air is taken from the air suction duct to the mill inlet and is supplied to the mill via the socket (A9).

Forced rinsing:

For example, in the case of inert or circuit gas operation.
The rinsing gas or air is fed via the socket (A9).
The discharge screw (A10) may not be removed!
Pressure and volume of the rinsing air (rinsing gas) depend on the operating conditions.

Guide values:

Pressure: up to appr. 0.2 bar (overpr.)

Volume: generally between 20 - 50 m³/h

4.6 Electrical connection

(to order - wiring diagram in control panel)

The electrical connection is to be carried out on site by an authorised expert.
Electrical equipment and design thereof must conform to the VDE standard 0113 and to the relevant general and local regulations.

Pay attention to the direction of rotation (Section 4.4)!

When carrying out electrical work, pay attention to the accident prevention direction "Electrical Systems and Operating Units" (VBG 4)!

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5.0 OPERATION

5.1 Preliminary work

The machine equipment employed depends on the problem specification.

If the material to be ground changes or if different throughputs or finenesses are to be achieved, contact Alpine for advice regarding a possible modification of the equipment.

- Check kind and condition (wear) of the machine equipment.
Pay attention to the accident prevention directions!

Exchange grinding track, beaters, beater system, studs, stud discs or sieve if necessary.

- When closing the mill door, or when installing the cover ring, grinding track, or sieve, clean the sealings and contact surfaces.
Pay attention to tight fit when fastening these elements.
- Turn over the grinding media and check for ease of movement.
- Check the product collecting system.

5.2 Selection of the grinding media

- general advice -

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5.2.1 Grinding medium

To be chosen according to the grinding fineness:

- stud discs produce the finest material
- the fan beater system with long and short grinding track is used for the medium to fine fineness range
- beater disc for coarse grinding.

5.2.2 Grinding tracks

By choosing the appropriate grinding track, the grinding fineness, too, influenced.
With the baffle-ribbed grinding track, the grinding fineness depends upon the angle of the baffle ribs (10° or 30°), the rebound direction and the perforation of the sieve insert (if a sieve insert is used).

To ensure that the mill is provided with the corresponding equipment for optimum operation, we recommend to contact Alpine, mainly in case of a modification of the problem specification or product to be processed.

5.2.3 Grinding track variants

The following are available:

Baffle-ribbed grinding track 30° long
Baffle-ribbed grinding track 10° long

with discharge gap (to order)
7.5 / 13.5 / 23 / 33 and 42 mm

Baffle-ribbed grinding track 30° short with sieve
Baffle-ribbed grinding track 10° long with sieve
Triangular-shaped grinding track with large pitch
Triangular-shaped grinding track with narrow pitch

with discharge gap (to order) 7.5 and 13.5 mm

5.2.4 Sieve

Easily flowable materials which contain few fines and have a granular or gritty structure, are optimally produced by using the beater disc and sieve; for this application, the speed usually has to be considerably reduced.

5.2.5 Air throughput

The highest air throughput is used for the fan beater system; a medium air throughput is available with the swing beater system, whereas the air throughput is lowest when using the stud disc and beater disc.

Referring to the equipment of the mill, the air throughput is approximately proportional to the speed. For the size reduction of heat-sensitive products, the fan beater system is ideally suitable.

The high air flow allows an effective cooling of the product and size reduction media. The effects of the air throughput on the operating characteristics have to be tested in every individual case.

5.3 Start-up

Pay attention to the accident prevention directions!

Start the plant according to the switching-on sequence. Then start product feed and slowly increase up to the maximum, permissible load. Observe the ammeter.

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5.4 **Mode of operation**

Pay attention to the fact that no foreign matter which could damage the grinding media is contained in the feed material.

Note:

Feed the product to the machine as constantly as possible - use an appropriate feed rating device! Check the feed rate by means of the ammeter. Too high a feed rate might cause blocking of the mill.

W A R N I N G

In case of overload (blocking, stalling), stop the machine immediately.
Pay attention to the directions for accident prevention!
Open the machine.
Clean the feed duct and the grinding chamber.
Check and clear the cause.
Check ease of movement of the grinding system, pay attention to eventual damage; repair if necessary.
Close the machine.

5.5 **Shut-down**

Stop the product supply.
Keep machine in operation until all product being in the machine is ground.
The current consumption decreases to idling value (appr. 40%).
Stop the drive motor.
Stop the plant according to the interlocking scheme.
In case of a longer shut-down period, open the machine.
Pay attention to the directions for accident prevention!

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5.6 **Exchange of complete grinding systems**

The grinding systems are exchangeable and fixed to the shaft (B2) and in the mill housing (A5).

The following grinding systems can be optionally used:

- ➔ Plate beater system (C)
- Swing beater system (D)
- Stud disc (E)
- Beater disc (F)

5.6.1 **Disassembly**

5.6.1.1 **Rotating elements of the grinding system**

Open the mill.
Loosen the 3 cylinder bolts from the covering (B7), and remove covering.
The mill shaft (B2) can be supported with the width SW 24.

Note:

The fastening of the rotating elements is the same for each of the available grinding systems.

5.6.1.2 Stationary elements of the grinding system

These elements also represent a component of a grinding system; therefore they are, too, exchangeable. In case of the plate beater system (C) and swing beater system (D), a cover disc (C4/D4) is bolted into the mill door or the intake piece (A2).

The cover disc can be removed by loosening the five hexagonal bolts.

In case of the stud disc grinding system (E), the door-side stud disc (E4), complete with distance piece (E5), can be dismantled from the mill door by loosening the bolting.

Furthermore, when dismantling or exchanging the stud disc grinding system, attention has to be paid to the fact that the cover disc (E7) on drive side of the housing is also removed.

The beater disc (F) is equipped with the following stationary grinding elements: an external grinding ring (F3) and an internal grinding ring (F2).

Both rings are bolted to the mill door or the intake piece (A2).

The grinding rings can be removed after loosening this bolting.

5.6.2 **Assembly**

Assembly is done in reverse order.

A T T E N T I O N

Tighten the cylinder bolts which serve to connect the hub of the grinding system and the mill shaft with **69 Nm!**

Pay attention to clean seats and contact surfaces!

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5.7 Exchange of grinding tracks and sieve grates

Grinding tracks and sieve grates are exchangeable and inserted into the machine housing.

The following options are available:

- Triangular-shaped grinding track or
Baffle-ribbed grinding track - long with segments (G)
- Baffle-ribbed grinding track - long without segments (H)
- Baffle-ribbed grinding track - short without segments (J)
- Sieve grate - one-part design (K,L)
- Sieve grate - split design (M,N)

5.7.1 Dismounting the grinding tracks and sieve grates

Loosen bolts (A7).
Open mill door (A6).
Pull the grinding track or sieve grate out of the mill housing (A5).

5.7.2 Mounting the grinding tracks and sieve grates

When mounting the grinding tracks, make sure that the product discharge gap is located at the back, i.e. on the drive side of the housing wall.

Note

In the case of a rasp-like sieve, pay attention to the correct mounting position (see Section 4.4)!

A T T E N T I O N

It is important that the seating and contact surfaces of the machine and grinding track are absolutely clean! Push the grinding track or sieve grate in to the stop. Make sure that the lateral grinding track ring or lateral grate ring are flush.

5.7.3 Setting the grinding gap

(see Fig. 2)

The grinding gap of the segmented grinding tracks (G1) is adjustable.

The size of the gap (X) depends on the material. In case of modification, contact Alpine for advice!

Open the machine and remove the grinding track from the machine.

Loosen the bolting (G6) between the grinding track (G1) and the grinding track segments (G2); remove the segments.

Insert spacers (G7) and re-bolt the grinding track segments (G2) in place.

Grinding gap X = 5 mm - without spacer

Grinding gap X = 4 mm - spacer (G7) of 1 mm thickness

Grinding gap X = 3 mm - spacer (G7) of 2 mm thickness

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5.7.4 **Exchange of the sieve inserts**

In case of grinding tracks and sieve gratings, the sieve rings or sieve segments of sieves in split design can be exchanged.

5.7.4.1 Grinding track - with sieve (J)

Dismantle the grinding track as per para. 5.7.1

Deposit the grinding track on a base in flat condition, so that the lateral grinding track ring (J2) is located on top.

Unscrew the cylinder bolts and remove the lateral grinding track ring (J2).

Now the sieve ring (J4) can be exchanged.

The sieve ring (J4) is inserted into grooves of the grinding track (J1) and lateral grinding track ring (J2); use a profile cord as seal (J6).

During sieve ring exchange, check these two seals (J5/J6) and renew them if necessary.

5.7.4.2 Sieve grate in one-part design (K/L)

The exchange of the sieve ring (K3/L3) is possible after loosening the eight cylinder bolts and removing the lateral grate ring (K1/L1).

The sieve grate in one-part design, for fine grinding (K), is equipped with seals(K4) at the lateral grate rings (K1).

The sieve rings (K3) are inserted into grooves; use a profile cord as seal (K5).

When exchanging the sieve ring, check the seals (K4/K5) for damage and renew them if necessary.

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5.7.4.3 Sieve grate in split design (M/N)

In case of the sieve grate in split design (M/N), the sieve insert consists of three sieve segments (M4/N4) which are guided in grooves and retained by grate supports (M3/N3).

For exchanging a sieve segment (M4/N4), the lateral grate ring (M1/N1) has to be removed and the bolting between the grate supports (M3/N3) and the central grate ring (M2/N2) has to be loosened.

The sieve segment (M4/N4) which is now accessible, can be drawn out and replaced with a new one.

The sieve grate in split design for fine grinding (M) is equipped with seals (M5) at the lateral grate rings (M1).

The sieve segments (M4) are guided in grooves with an inserted profile cord as seal (M6).

During exchange of sieve segments, check the seals (M5/M6) for damage and renew if necessary.

5.7.5 **Mounting**

Mount the sieve rings and sieve elements in reverse order to dismounting.

A T T E N T I O N

Pay particular attention to cleanliness in the sieve grooves and profile cords (seals)!

Refer to Section 6 - "Maintenance" - for details when wear necessitates the exchange of any part.

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6.0 MAINTENANCE

6.1 Lubrication

Lubricate through the two grease nipples (N18) located on the bearing with several strokes of the grease gun every 50 hours of operation.

WARNING

Lubricate only while the mill is in operation!
Protect the grease nipples with dust caps.

Recommended lubricant:

Lubricant K2K - DIN 51825 - group 8

e.g.: ESSO-BEACON 2 or EP2
SHELL-ALVANIA R2 or EP2
ARAL - HL2 or HLP2 or
another make of equivalent quality.

6.2 Cleaning

Pay attention to the accident prevention directions!

6.2.1 Dry cleaning

Easily removable residues of ground material can be cleaned out through the opened mill door.
For thorough cleaning, dismount the grinding system and grinding track or sieve.
(refer to Section 5.6 and 5.7)

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Remove the drain bolt (A10).
Occasionally, remove the cover (A1) of the mill housing after having dismantled the grinding system; clean the rinsing air channel and rinsing chamber "S".

6.2.2 **Wet cleaning**

Remove the drain bolt (A10).
Open the connection at the air supply socket (A3) or the mill inlet (A2) and inject a thin water jet into the closed machine while it is in operation.
Do not overload the machine, observe the current consumption!

Take care that the injected water can flow off.
Dry the machine by idling operation.

6.3 **Wear control**

The grinding media, in the following sequence, are mainly subject to wear:

- sieve
- beaters or studs
- grinding track.

Therefore these parts have to be checked at regular intervals of time.

Furthermore, the door sealing (A8) has to be checked. Advanced wear can be recognised by production lag or impaired grinding fineness.

Uneven machine running is a sign for uneven wear of the beaters. For safety reasons, the beaters and studs are to be exchanged in due time.

The swing beaters and fan beaters can be turned by 180°, thus they are usable on two sides. Check the sealing rings (K4/L5/G5/H4/J5) and the door seal (A8), and renew if necessary.

6.4 Spare parts

We recommend the most frequently required spare parts to be kept in stock .

Customary are:

- sieve rings
- grinding tracks
- beaters for the beater system used
- studs for stud discs
- insert rings
- eventually lateral grinding track rings
- and door seals.

When ordering spare parts, please specify:

Part number	as per enclosed spare parts list
Machine type	as per type label
Machine number	as per type label

7.0 S E R V I C I N G

The mentioned wear parts have to be exchanged in due time.

The parts are marked according to the enclosed spare parts drawing (EZ).

Only carry out overhauling work on your own if suitable facilities are available.

Above all, balancing work should only be carried out if balancing fixtures or tipping brackets are available!

7.1 Exchange of studs

Dismantle the stud discs as per Section 5.6

7.1.1 Distance between the studs

The distance of the front surfaces of the studs (E5) has already been set in our works ($1^{+0.3}$ mm, while the door is tightly closed).

When exchanging the studs, their dimensional tolerance has to be kept so small that this distance does not have to be reset.

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7.1.2 **Exchange of the studs**

7.1.2.1 Studs on door-side (E4)

Loosen the bolting between the distance piece (E5) and the stud disc (E4) on door side.

Do not entirely unscrew the three bolts; loosen the seat of the stud disc by soft blows onto the screw head.

Fully unscrew the bolts and remove the the stud disc (E4).

A T T E N T I O N

Pay attention to the set of adjusting washers (E6)! The loss of a washer means that the gap setting is no longer correct!

The studs (E3) can be pressed out of the stud disc or knocked out by soft blows onto the front surface. If the studs are deformed, grind a groove, knock off the stud and push out the broken stud.

Insert or, if necessary, press in the new studs (E3). Tight fit of the studs is not necessary; in case of a considerable play, however, - e.g. caused by repeated breaking of studs - a new stud disc has to be used.

A T T E N T I O N

If the studs are considerably worn, never renew individual studs, but provide the complete stud disc with new studs.

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In case of a preceeding stud breaking, the mill and, above all, the mill shaft should be checked (truth of rotation).

Bolt the stud disc (E4) with correct set of adjusting washers (E6) and the distance piece (E5).

7.1.2.2 Stud disc on drive side (E1)

Loosen the bolting (6 x M5) of the support plate (E2) and the stud disc (E2), and remove the support plate (E2).

Now the studs (E3) can be exchanged analogous to the process described in Section 7.1.2.1.

Bolt the support plate (E2) to the stud disc (E4); the installation of the discs with new studs is carried out according to Section 5.6.

7.2 Beater system

7.2.1 General information

The rotating grinding media have been dynamically and statically balanced.

When exchanging beaters, only use a set of beaters with exactly the same weight.

Weight balancing of the newly inserted rotating parts of the grinding system ensures a sufficient balancing accuracy.

(maximum difference in weight: 2 g)

The beaters can be individually exchanged or, if possible, turned by 180° (in case of wear on one side). When exchanging individual beaters, attention has to be paid to the fact that the beater diametrically opposite the exchanged beater also has to be replaced with a new one of exactly the same weight. Unbalance of the beater system has to be avoided in any case.

Note

If appropriate facilities are available, it is recommendable to statically balance the beater system after every modification.

7.2.2 Plate beater system (C)

Dismantle the beater system according to section 5.6. Loosen bolts (C2) and remove the plane-type steel beaters (C1) from the plate beater system (C3). During assembly of the exchanged parts, the bolts (C2) which serve to fasten the plane-type steel beaters (C1) are to be tightened with a torque of 69 Nm. Furthermore, they are to be protected against becoming loose by a liquid bolt protecting agent (e.g. Omnifit 30 H).

7.2.3 Swing beater system (D)

Dismantle the beater system according to Section 5.6. The two beater discs (D2/D3) are connected with cylinder bolts and adjusting pins. After loosening the bolts, the two beater discs (D2/D3) can be separated.

The swing beaters (D1) are now accessible and can be exchanged.

During exchange, pay attention to Section 5.1.1!

If the beater system has to be statically balanced, the swing beaters are to be fixed to the periphery.

7.2.4 Beater disc (F)

Dismantle the beater system according to Section 5.6. The beater disc (F1), the internal ring (F2) and the external ring (F3) of the grinding track are mainly subject to wear.

Assembly and disassembly as per Section 5.6.

The sieve grate or grinding track reamer (F4) are connected to the beater disc (F1) by two bolts each. After exchange, these bolts are to be re-tightened with a torque of 75 Nm.

A T T E N T I O N

Make sure that the reamers (F4) have the same weight!

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7.3 Grinding tracks and sieve grates

In case of wear, grinding tracks, sieve grates and sieve rings can be exchanged completely or in segments, as per Section 5.7.

7.4 Bearing

Defective mill bearings can be recognised by the formation of remarkable, unusual noise or heat, by uneven operation and by increased power consumption. In this case, the bearings have to be exchanged.

A T T E N T I O N

Only exchange the bearings in sets!
Only exchange the bearings if appropriate facilities are available!

315 UP2 - 1122/3E

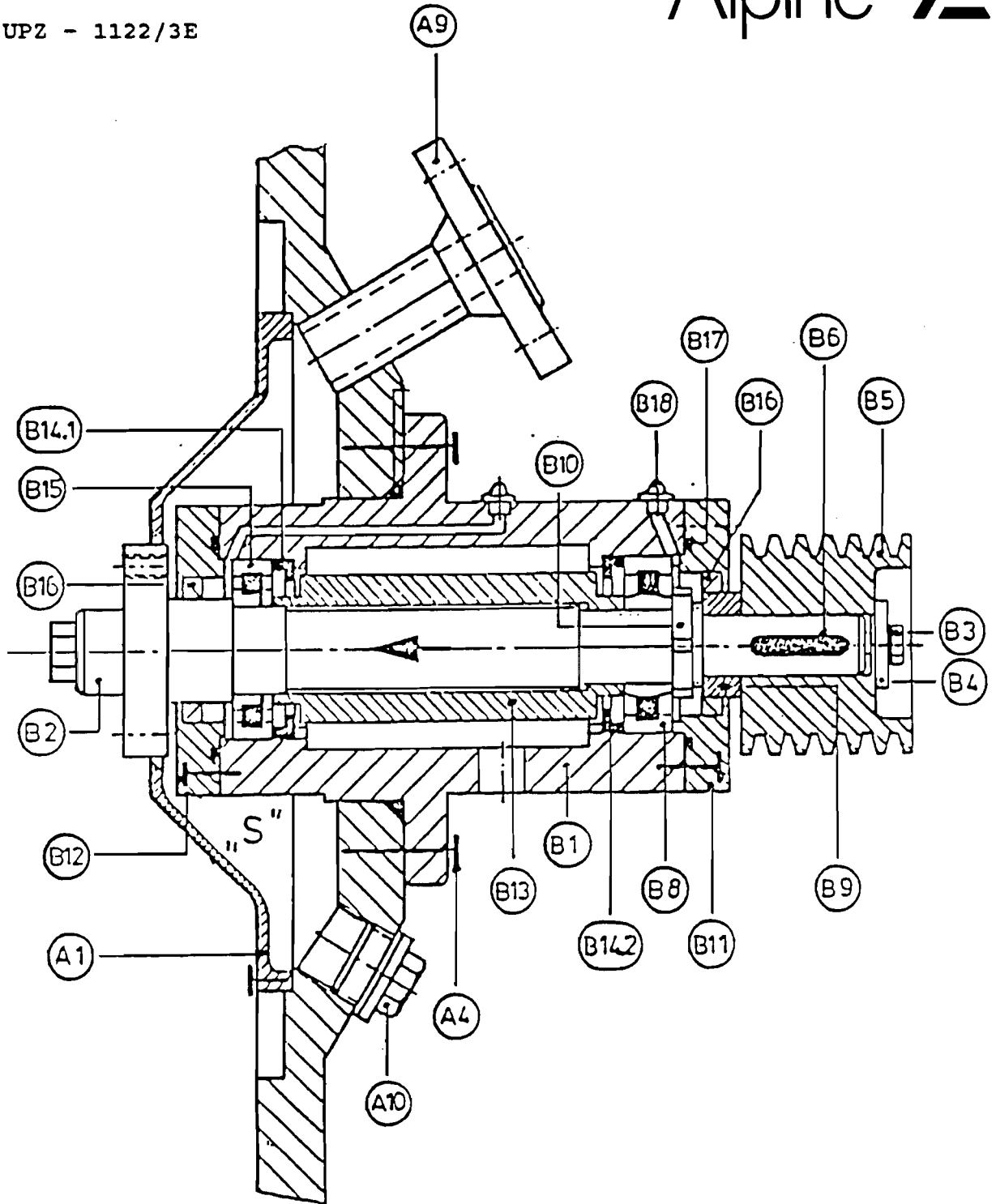


Fig. 5: Mill bearing

7.4.1 Disassembly

Remove belt guard and V-belt.
Open the machine and dismantle the rotating elements of the grinding medium, as per Section 5.6.1.1.

Loosen bolts (A4) and pull the complete bearing out of the mill housing (A5).

Loosen the bolt (B3) with locking washer, and remove the pressure disc (B4).

Take off V-belt pulley (B5) and remove adjusting spring (B6).

A T T E N T I O N

Only take off V-belt pulleys from the machine shaft by means of an extraction device!

Remove the distance ring (B9).

Loosen bolting of the bearing cover (B11) and remove the bearing cover together with the sealing ring.

Loosen the self-locking nut (B10) with an appropriate tool.

Drive the mill shaft (B2) out of the bearing housing (B1) in direction of arrow, using a piece of wood, rubber hammer or similar.

Unbolt the bearing cover (B12) with sealing ring (B16) from the housing (B1).

Remove the internal ring of the drive side bearing (B8), and carefully drive the external ring with rollers out of the housing (B1).

Apply soft blows onto the grease retaining ring (B14.2) from the opposite side.

Use a levelled aluminium or copper mandrel and a rubber hammer!

Remove the distance piece (B13) from the housing (B1).

Dismantle the roller bearing (B15) in a similar way as the drive-side bearing (B8).

Thoroughly clean all elements.

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7.4.2 **Assembly**

During assembly, pay attention to utmost cleanliness! Slightly grease the elements before assembly. Unwrap the bearings only when the assembly work is started.

A T T E N T I O N

Only renew the bearings in sets!

Check the sealing rings (B16) and the round cord seals (B17) for damage; renew if necessary! During assembly of the sealing rings (B16), pay attention to proper position of the sealing lip (towards the bearing)!

Pay attention to the general guidelines for the assembly of antifriction bearings!

Insert the grease retaining ring (B14.1). For assembly, the bearing (B15) can be split up into three parts. Drive the external ring with roll bodies of the bearing (B15) from side of the grinding system into the bearing housing (B1) to stop on the grease retaining ring. Apply soft blows onto the periphery.

For this purpose, use a levelled aluminium or copper mandrel and a piece of wood (antifriction bearings are highly sensitive to metal chips!). Carefully push the bearing cover (B12) with sealing ring (B16) across the shaft (B2) until it meets the shaft collar. Put the internal ring of the bearing (B15) onto the shaft (B2), and move it to stop by using appropriate tools.

Insert this pre-assembled component into the bearing housing (B1) from side of the grinding system, and bolt the bearing cover (B12) to the housing (B1).

Insert the bearing ring (B15) and push the distance piece (B13) to stop.

Insert the grease retaining ring (B14.2) and external ring of the bearing with roll bodies (B8) into the bearing housing (B1).

For assembly, use appropriate tools (drive sleeve or similar).

A T T E N T I O N

Avoid canting!

Drive the internal ring of the bearing (B8) onto the shaft (B2) to stop, using a levelled mandrel or metal tube.

Secure the bearing (B8) by means of a nut (B10).

Tighten the self-locking nut (B10) with appropriate tools!

Note

Even with gentle handling, the nut (B10) has to be replaced with a new one after it has been loosened and tightened several times, because it loses its locking force.

Push the distance ring (B9) onto the shaft (B2).
Carefully put on the bearing cover (B11), in order to avoid damage of the sealing ring (B16). Bolt it to the bearing housing (B1).

Insert the adjusting spring (B6), drive the V-belt pulley (B5) onto the shaft (B2) and fix it by means of the pressure plate (B4), protection and bolt (B3).

Before assembly, lubricate the contact surfaces , e.g. with **Molykote paste**, in order to avoid fretting corrosion.

When installing the V-belt pulley, **carefully** apply soft blows around the periphery, in order to avoid any damage of the antifriction bearing!

Insert the complete bearing into the mill housing (A5) and bolt it with screws (A4).
Assemble the grinding system according to Section 5.6.2.

Check for ease of movement of the bearing.
Put on and stretch the V-belts; in this respect, pay attention to the Technical Instructions TA 001/1 - **"Narrow-gauge V-belts"**.
Mount the belt guard.
Close the mill.

A T T E N T I O N

Thoroughly lubricate the overhauled machine.
Press grease into the running machine through the grease nipples by means of the grease gun until clean grease leaks out.

Remove this leakage grease.

Narrow V-belts

Alpine V-belts comply with DIN 7753 - Endless V-belts - and DIN 2211 - V-belt Pulleys for Narrow V-belts.

The V-belts shall be aligned to flush. - Non-flushing pulleys cause V-belt torsion, increased flank wear as well as excessive noise.

Pulleys must be free of burrs, rust and impurities. Unclean pulleys may damage the V-belts in advance.

V-belts are applied by hand without using force. For this purpose, the distance between the axles is decreased.

Forced application via the pulley edges or the use of mounting irons often invisibly damage the tie rod and the fabric coating and thus considerably reduce lifetime.

V-belt drives must be carefully adjusted. Too low pretension results in insufficient power transmission and premature wear caused by excessive slip.

Too high pretension causes excessive stretching, unnecessary working at high temperatures. This results in reduced lifetime. Moreover, the shaft bearings are subject to unnecessary high loads.

After short running-in time, the pretension must be checked and the V-belt has to be re-adjusted if necessary.

Wrongly adjusted V-belts are subject to premature wear.

All V-belts of multigroove pulleys must be of the same length.

Always exchange the complete set of V-belts. It is not possible to use new and used V-belts together in one set because of the different belt elasticity.

The use of belt wax or other means is not required. The drive capacity is guaranteed by correct pretension.

V-belts must be protected from oil mist, oil drops or other chemicals. Constant influence of one of those media leads to soaking and premature destruction of the V-belt.

Belt tension

This simplified method is to facilitate maintenance of V-belt drives, if the most important data are not known to the fitter and if thus, the optimum tension cannot be calculated.

For this "simplified method", only the pulley diameter and the axle distance is required.

Instructions

1. Determine the test force per V-belt f from the table.
 2. Determine the smallest pulley diameter and take indentation depth E from the table.
-

3. Calculate the indentation depth of the belt side E_a .

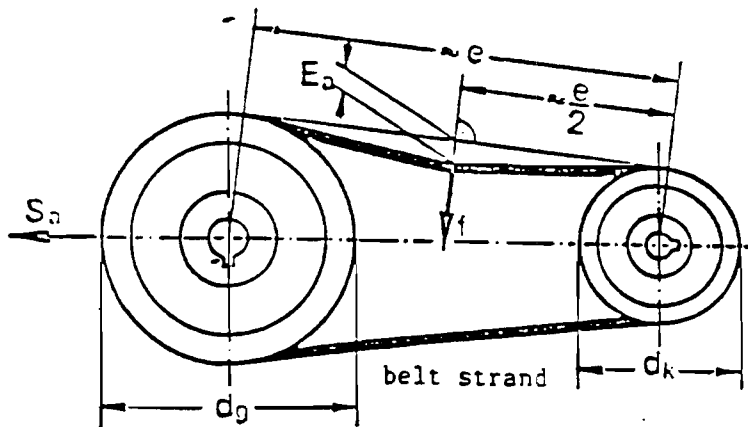
e = distance between axles (mm)

E = indentation depth per 100 mm of distance between axles (mm)

E_a = indentation depth of the belt side (mm)

$$E_a \approx \frac{E \times e}{100}$$

4. The test force f must be applied in the centre of the belt strand.
The drive must be stretched till the calculated depth of indentation E_a is obtained.



Example:

Profile = SPZ	$f = 25 \text{ N}$	} from the table
$d_k = 100 \text{ mm}$	$E = 2.05 \text{ mm}$	

TA 001/1 E

$$e = 380 \text{ mm} \quad E_a = \frac{2.05 \times 380}{100} = \text{approx. } 7.7 \text{ mm}$$

The tension data indicates maximum transmissible power (per V-belt). With low power, the tension values can be adapted percentally.

For re-adjustment, indentation depth E_a is multiplied by factor 1.3!

TA 001/1 E

Profile	Test force per V-belt f (N)	Diameter of the small pulley d_K (mm)	Indentation depth per 100 mm Axle distance F_a (mm) E_a (mm)	
			Standard	Super-TX Optibelt
SPZ, 3V/9N SPZX, 3VX	25	56 ≤ 71 > 71 ≤ 90 > 90 ≤ 125 > 125	2.45 2.20 2.05 1.90	2.10 1.95 1.80 1.70
SPA, SPAX	50	71 ≤ 100 > 100 ≤ 140 > 140 ≤ 200 > 200	3.20 2.75 2.55 2.45	2.90 2.55 2.40 2.30
SPB, 5V/15N, SPBX, 5VX	75	112 ≤ 160 > 160 ≤ 224 > 224 ≤ 355 > 355	3.00 2.55 2.22 2.10	2.55 2.20 1.85 1.75
SPC, SPCX	125	180 ≤ 250 > 250 ≤ 355 > 355 ≤ 560 > 560	2.55 2.20 2.00 1.90	2.20 2.05 1.90 1.70
10/Z, 10/ZX	25	40 ≤ 50 > 50 ≤ 71 > 71 ≤ 100 > 100	2.30 2.20 2.00 1.90	2.05 1.95 1.85 1.75
13/A, 13/AX	25	63 ≤ 80 > 80 ≤ 100 > 100 ≤ 132 > 132	2.40 2.20 2.05 1.90	2.00 1.95 1.85 1.75
17/B, 17/BX	50	90 ≤ 125 > 125 ≤ 160 > 160 ≤ 200 > 200	3.15 2.85 2.75 2.65	2.65 2.50 2.60 2.50
22/C, 22/CX	100	140 ≤ 200 > 200 ≤ 265 > 250 ≤ 355 > 355	3.30 3.10 2.90 2.70	2.90 2.80 2.70 2.50
32/D	150	315 ≤ 355 > 355 ≤ 450 > 450 ≤ 670 > 670	2.65 2.40 2.30 2.20	- - - -

Some manufacturers of narrow V-belts offer measuring devices for checking and adjusting the belt tension.

If such a device is not available, use a spring balance (with corresponding test force), a ruler and a measuring device (depth gauge, etc.).

At least during the start-up phase, the indentation depth should be measured, thus giving advice of the correct belt tension.

Storage of V-belts

General guidelines for storing, cleaning and maintenance for products made of caoutchouc or rubber can be found in DIN standard 7716.

Storage

V-belts should be suspended on so-called **saddles** or tubes with larger diameters. The diameter should be 10 times as high as the cross-section of the V-belt.

Very long V-belts can be stacked if they are properly folded.

Short V-belts can be stored in shelves. Stacks should not be higher than **300 mm**, as otherwise the V-belts on bottom of the stack can be deformed.

V-belts for precision mechanics can be stored on rolls.

Hooks or nails are not suitable for suspending V-belts!

TA 001/1 E

Storing room

The storing room should be cool, dry and ventilated in a draught-free manner.

The room temperature shall range between 15°C and 25°C.

V-belts must not be stored in the vicinity of heat generators.

Direct sun radiation or artificial light with a high content of ultraviolet rays should be avoided.

Ozone generating equipment like spark-generating electric switches should not be continuously used in storing rooms.

Easily flammable materials, lubricants, acids and other aggressive substances must not be stored or used in the storing room.

Elastomeres and textiles could be corroded and destroyed.

Cleaning

Impurities can be removed with a mixture of glycerol and alcohol (1 : 10).

Solvents like essence or benzene must not be used.

Do not use objects with sharp edges for cleaning!

Pos. Item Posle	Bestell-Nr. Order number No.de comande	Ergänzende Angaben zum Teil Additional indication concerning the part Fudication supplementaires	Stückzahl Quantity Quantité
1	096385	Classifier shaft	1
2	087735	SKRS 6xSPZ Dw= 90 DIN 2211	1
3	009528	Feather key A8x7x45 DIN 6885	1
4	026913	Retaining plate D28 WN 1-6802	1
5	008525	M10x25 DIN 933	1
6	007340	Spring ring A10 DIN 127	1
7	087734	Distance ring	1
8	087743	Bearing cap	2
9	088037	M 8x20 DIN 912 A4-70	6
10	009319	O-ring seal 85x4 70 NBR	2
11	087950	35x1,5 type GUK	1
12	004426	Cyl. roller bearing NU307C3 DIN 5412	1
13	087732	Grease retaining plate	2
14	087733	Distance piece	1
15	087949	Cyl. roller bearing NUP 208 C3	1
16	087947	Rotary shaft seal 48x65x10	2
17	009687	AM 10x1 DIN 71412	2
18	096382	Bearing housing-	1
19	143887	O-ring seal 4x 437 Silicon	1
20	147312	O-ring seal 6x1310 Silicon	1
21	055440	M12x50 DIN 933 A4-70	4
22	096386	Screen grounded	1
23	008885	M10x50 DIN 6912 A4-70	3
24			
25	147538	Pol disk T= 24 galvanize to order	1
26	143238	Speed sensor type DM 110 to order	1
32	123684	CM 24x100 DIN 444	6
	113386	M24 - with collar DIN 6331	6
33	020218	Connecting screw R1 DIN 910	1
	007561	Seal ring C33x39x2,5 DIN 7603	1
34	177631	Spike coupling DN 125 MOD.77 Silicon	2

Stückliste / Parts list / Liste de pièces

1 122 5302 191643 with bedding 096381

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Hierzu Ersatzteilzeichnung
See Spare parts drawing
Voir Schéma de pièces de rechange

EZ 1122 - 04

Ersatzteilliste
Spare parts list
Liste de pièces de rechange

Multiplex Fines Impact Mill 315 UPZ


EL1122-04.04

10 bar-Ü / tangential / St / grounded

Blatt-Nr.: 1 Erstellt:

Blattzahl: 6

Erstellt: [Signature]

Pos. Item Posle	Bestell-Nr. Order number No.de comande	Ergänzende Angaben zum Teil Additional indication concerning the part Fudication supplementaires	Stückzahl Quantity Quantité
35	191698	Plate beater grind.unit ground. compl.) to	1
	096390	" " " " " 10 bar-Ü}order	1
35.1	096392	Beater disk	1
35.2	096393	Beater disk } to	8
	191701	" " with raker } order	2
35.3	008619	M10x25 DIN 933 A4-70	20
35.4	191699	Covering	1
	096394	Covering	1
35.5	013218	M 6x12 DIN 6912 A4-70	3
35.6	086773	M10x30 DIN 912 A4-70	3
35.7	191700	Cover disk	1
	096395	Cover disk 10 bar-Ü	1
35.8	008620	M10x30 DIN 933 A4-70	3
-	008621	M10x35 DIN 933 A4-70	5
35.9	013456	Lock washer 10 WN 1-9401	5
36			
37	096396	Pin disk grind.unit compl. grounded to order	1
37.1	096402	Distance piece D146	1
37.2	008620	M10x30 DIN 933 A4-70	6
37.3	008621	M10x35 DIN 933 A4-70	2
37.4	013456	Lock washer 10 WN 1-9401	8
37.5	087810	Adjustment insert set	1
37.6	096398	Pin disk - door side	1
<u>Stückliste / Parts list / Liste de pièces</u> 1 122 5302 191643 with bedding 096381 -			
Hierzu Ersatzteilzeichnung See Spare parts drawing Voir Schéma de pièces de rechange		EZ 1122 - 04 Ersatzteilliste Spare parts list Liste de pièces de rechange	
Multiplex Fines Impact Mill 315 UPZ 10 bar-Ü / tangential / St / grounded			EL1122-04.04
		Blatt-Nr.: 2	Erstellt:
		Blattzahl: 6	

Pos. Item Posle	Bestell-Nr. Order number No.de comande	Ergänzende Angaben zum Teil Additional indication concerning the part Fudication supplementaires	Stückzahl Quantity Quantité
37.7	026966	7x35 WN 1-3102	467
37.8	096400	Pin disk - drive side	1
37.9	096401	Support disk	1
37.10	020549	M 6x12 DIN 963	6
37.11	008620	M10x30 DIN 912 A4-70	3
37.12	096394	Covering	1
37.13	013218	M 6x12 DIN 6912 A4-70	3
37.14	096403	Cover disk	1
37.15	008621	M10x35 DIN 933 A4-70	3
37.16	007360	Lock washer 10 WN 1-9401	3
38			
39			
40			
41			
42	191696	Trian.ribb.grind.unit narrow spac.ground. t.o.	1
42.1	191883	Grinding track ring	1
42.2	191865	Lateral ring	1
42.3			
42.4	107563	Spacer tube L= 46,5	6
42.5	008880	M 8x60 DIN 6912 A4-70	6
42.6	115418	Profil cord 8x8x1145 Silicon	1
42.7	115418	Profil cord 8x8x1050 Silicon	1
42.8	191863	Grind.segm.narrow spac. ground. to order	6
42.9			
42.10	088258	Spacer ring 1 mm thick f. gap 4 mm } to	2
42.11	088257	Spacer ring 2 mm thick f. gap 3 mm } order	2
42.12	016501	M10x35 DIN 604	12
42.13	007318	Disk 10,5 DIN 125	12
42.14	013456	Lock washer 10 WN 1-9401	12
42.15	009064	M10 DIN 934 A4-70	12

Stückliste / Parts list / Liste de pièces

1 122 5302 191643 with bedding 096381

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Hierzu Ersatzteilzeichnung
See Spare parts drawing
Voir Schéma de pièces de rechange

EZ 1122 - 04

Ersatzteilliste
Spare parts list
Liste de pièces de rechange


Multiplex Fines Impact Mill 315 UPZ

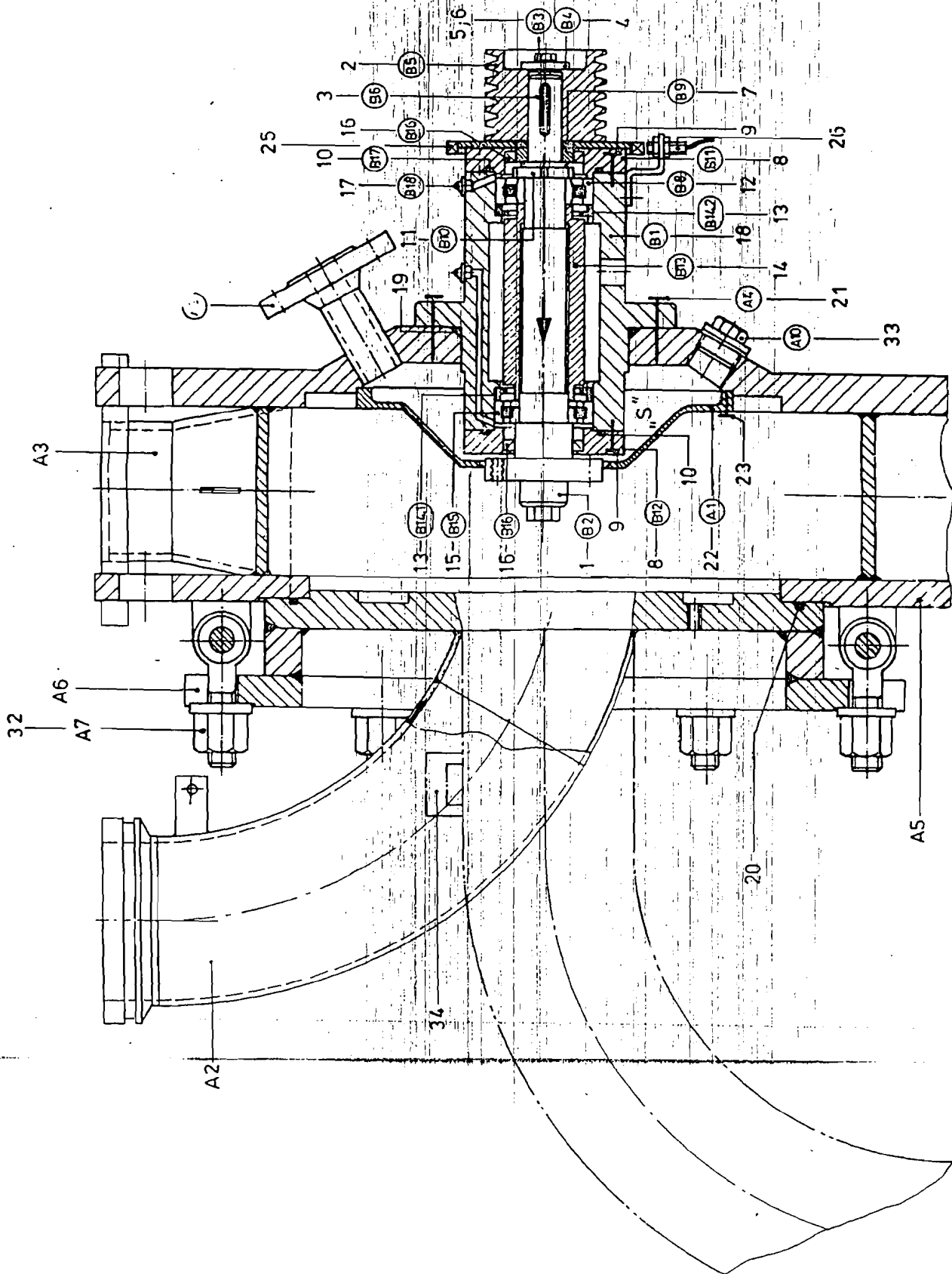
EL1122-04.04

10 bar-Ü / tangential / St / grounded

Blatt-Nr.: 3 Erstellt:

Blattzahl: 6

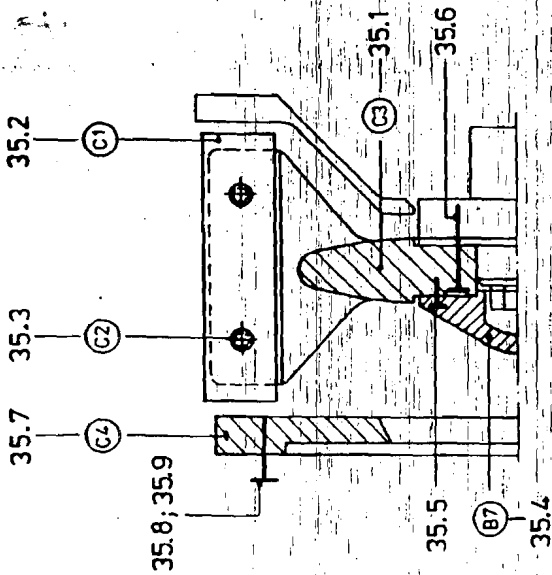
Pos. Item Posle	Bestell-Nr. Order number No.de comande	Ergänzende Angaben zum Teil Additional indication concerning the part Fudication supplementaires	Stückzahl Quantity Quantité
49	096404	Sieve unit compl. undivided ground. to order	1
49.1	096405	Lateral ring	2
49.2	096406	Spacer bushing - grounded	4
49.3	008875	M 8x16 DIN 6912 A4-70	8
49.4	115418	Profil cord 8x8x1145 Silicon	2
49.5	011629	Profil cord 6x990 hell 674 rubber 65° Sh	2
49.6	096407	Sieve f. sieve unit undivide Thickness und perforation - to order	1
<u>Stückliste / Parts list / Liste de pièces</u> 1 122 5302 191643 with bedding 096381			
Hierzu Ersatzteilzeichnung See Spare parts drawing Voir Schéma de pièces de rechange		EZ 1122 - 04	
Multiplex Fines Impact Mill 315 UPZ 10 bar-Ü / tangential / St / grounded			EL1122-04.04
			Blatt-Nr.: 4 Erstellt:
			Blattzahl: 4



<p>Alpine Aktiengesellschaft Mechanische Verfahrenstechnik Postfach 10 1109 D-8900 Augsburg 1 Tel. (08 21) 57 40 81 Telex 0 53 8012</p>		<p>ALPINE</p>		<p>En Ersatzteilzeichnung Spare parts drawing Schéma des pièces de rechange</p>		<p>EZ1122-04</p>	
<p>Die Bestellung von Ersatzteilen Maschinenbau: Maschinen-Nummer und Baugruppen-Nummer angeben. When ordering spare parts please specify machine type, serial number and order number. Les commandes des pièces de rechange "utilisez bien indiquer" le type de machine, le numéro de série ainsi que le numéro de la commande.</p>		<p>Beschreibungszeichnung Description drawing Dessin descriptif</p>		<p>Ball Nr. 1 Baugruppe 3</p>		<p>Erweit Stüdler</p>	
<p>Multiplex Feinprallmühle 315UPZ</p>				<p>10 bar U druckstofffest</p>			

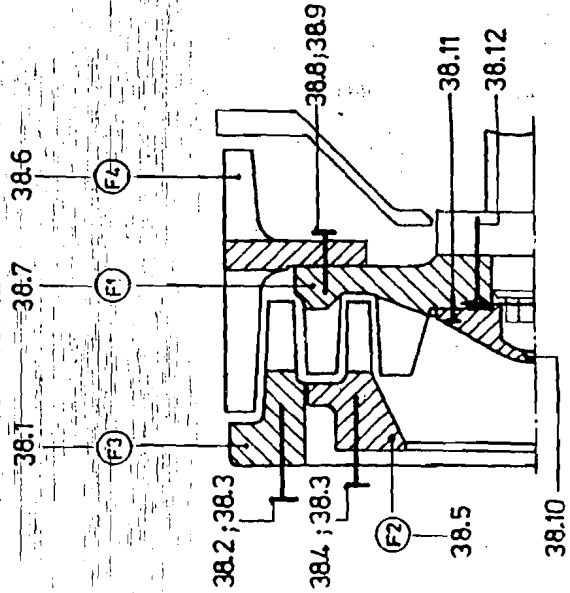
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INSTALLED



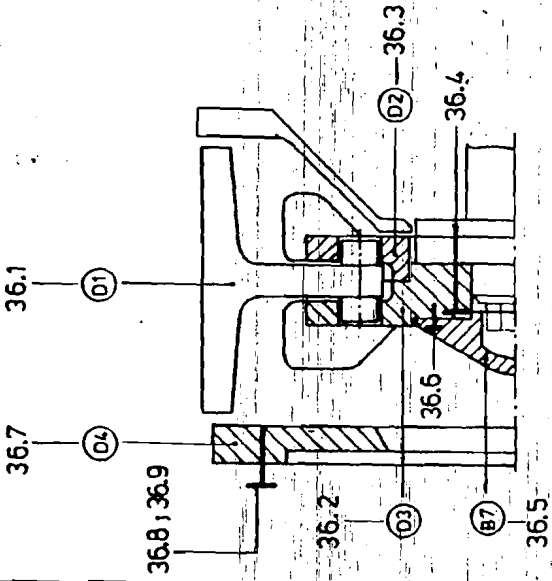
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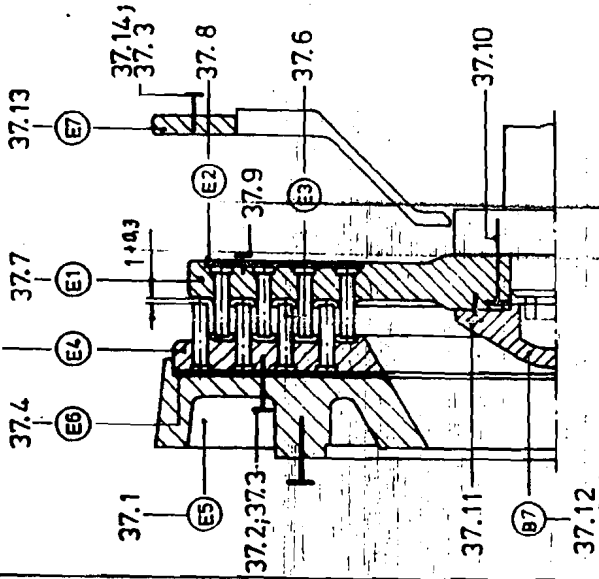
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(D)



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Alpine

Bei Bestellung von Ersatzteilen Maschinen-Typ, Maschinen-Nummer und Bestell-Nummer angeben. When ordering spare parts please specify machine type, serial number and order number. Si vous commandez des pièces de rechange, veuillez bien indiquer le type de machine, le numéro de série ainsi que le numéro de la commande.	Ersatzteilbezeichnung Spare parts drawing Schéma des pièces de rechange	Blatt Nr. 2	Blatt(en) 3	Ersellt: EZ1122-04
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